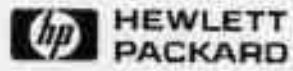


Purchase this second-hand HP1652B from Teledac Inc

For more information please click on: http://teledac.com/ex-equip_b.htm

HP 1652B/HP 1653B Logic Analyzers



LOGIC ANALYZERS

Selection Guide

HP's selection of logic analyzers consists of the HP 1650 series of portable logic analyzers and the HP 16500A logic analysis system. The following application reference guide provides a quick overview of HP analyzers, key measurement needs, and features. More information on logic analyzers is provided on the following pages.

Application Reference Guide

	1650B	1651B	1652B	1653B	1654B	16500A
Microprocessor Support						
8-bit	Y	Y	Y	Y	Y	Y
16-bit	Y		Y		Y	Y
32-bit	Y		Y			Y
RISC						Y
DSP	Y	Y	Y	Y	Y	Y
Multiple Microprocessor Support	Y		Y		Y	up to 10
Bus	Y	Y	Y	Y	Y	Y
Custom	Y	Y	Y	Y	Y	Y
Hardware Analysis						
Timing						
100 MHz/All Channels	Y	Y	Y	Y	Y	Y
1 GHz						Y
Glitch Detection	5 ns	5 ns	5 ns	5 ns	5 ns	2 ns
Maximum Channels	80	32	80	32	64	400 @ 100 80 @ 1 GHz
Digitizing Oscilloscope						
400 MSa/s-100 MHz BW			Y	Y		Y
1 GSa/s-250 MHz BW						Y
50 MBit/s Pattern Generation						
Cross-Domain Measurements						
Timing/State	Y	Y			Y	
Timing/State/Scope			Y	Y		Y
Software Analysis						
State Speed (MHz)	35	35	35	35	35	35/100
Channel Count	80	32	80	32	64	400/208
Sequencer Speed (MHz)	35	25	35	25	35	35/100
Correlated State Listings	Y	Y	Y	Y	Y	Y (100 MHz)
System Performance Analysis	Y	Y	Y	Y	Y	Y
Compare/Run Until	Y	Y	Y	Y	Y	Y
Chart Mode	Y	Y	Y	Y	Y	Y
System Features						
Portable	Y	Y	Y	Y	Y	
Modular						Y
Programmability			HP-IB/RS-232 on all			
Hard Copy Output			Variety of HP-IB or RS-232 printers			
Setup Storage/Auto Load	Y	Y	Y	Y	Y	Y
Data Storage			compatible disk files			
Color						Y
Keyboard/Mouse						Y
Page Reference	327	327	329	329	327	330

Logic Analysis Systems

HP 16500A	HP 16510B	HP 16515/516A	HP 16530/531A
5-slot mainframe	80 channels/card	1 GHz timing analysis	Oscilloscope time base and acquisition cards
9-inch color display	Up to 5 cards/16500A	16 channels/card	Up to 8 input channels per 16500A
Touch screen or mouse control	100 MHz sampling for timing analysis	Up to 80 channels with full capability/16500	Can be triggered by state or timing analysis
Two 3.5-inch disk drives	35 MHz maximum input clock in state analysis	1 ns resolution	400 Msamples/s for 100 MHz bandwidth for single-shot and repetitive signal analysis
Inter-card triggering via intermodule bus	Detects glitches as small as 5 ns	8 kbit/channel memory	Automatic measurements and statistics
Screen hard copy via RS-232 + HP-IB	Simultaneous state/timing analysis	HP 16520/521A	HP 16532A
Programmability via RS-232 + HP-IB	HP 16511B	50 Mbit/s pattern generator	1-Gigasample/s oscilloscope
Simultaneous display of state, timing, and oscilloscope traces	Combines two HP 16510B systems	Up to 204 channels/16500A	250 MHz single-shot bandwidth
Links to CAE and manufacturing testers	Triggers up to 160 channels wide	ECL and TTL output	2 channels per card
	HP 16540/541	Can be combined with 16510B or 16515/516A for stimulus/response testing	Up to 10 channels per 16500A
	100 MHz state/timing analysis		Automatic measurements and statistics
	4 kbit or 16 kbit/channel memory		
	Up to 208 channels per 16500A		

LOGIC ANALYZERS

Portable Logic Analyzers

HP 1652B, 1653B

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- 80 channels of state/timing
- 2 channels of 400 MSa/s digitizing oscilloscope
- More measurement power at a lower cost than separate instruments

Logic Analyzers with a Digitizing Oscilloscope

The HP 1652B and HP 1653B Logic Analyzers have all of the features of the HP 1650B and HP 1651B plus two 400 MSa/s digitizing oscilloscope channels, automatic pulse parameter measurements, and time-correlated state, timing, and oscilloscope displays. You still can completely analyze your 8-, 16-, or 32-bit microprocessor while getting better definition on system signals with the 2-channel oscilloscope.

You can characterize critical timing parameters with time interval measurements to better than 1 ns accuracy or examine glitches in your system with the built-in scope to determine if noise or loading is the problem. Or, you can use the scope to enhance your troubleshooting capabilities.

Two Simultaneous 400 MSa/s Analog Channels

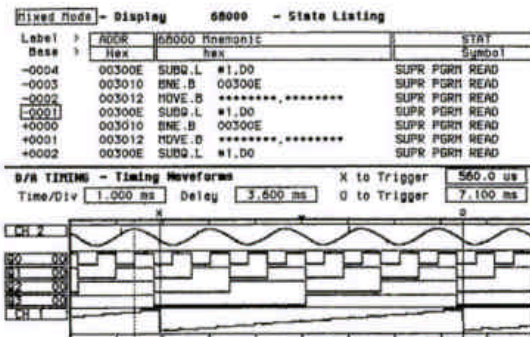
Each scope channel is a full-featured, 400 MSa/s, 100 MHz bandwidth oscilloscope. Both channels simultaneously capture nonrepeating events with a full 2,048 samples per channel. The built-in scope is based on the same technology used in the popular HP 54502A 100 MHz Single-Shot BW Oscilloscope. The scope features include precision voltage and time-interval measurements, autoscale, waveform math, auto-calibration, infinite persistence, and averaging display modes.

Time-Correlated State, Timing, and Oscilloscope Measurements

System debugging becomes easier when you display time-correlated state, timing, and analog displays on the same screen. You can see how hardware and software interact, while getting an accurate view of how your system sees the signal.

Cross-Trigger Measurement Modules

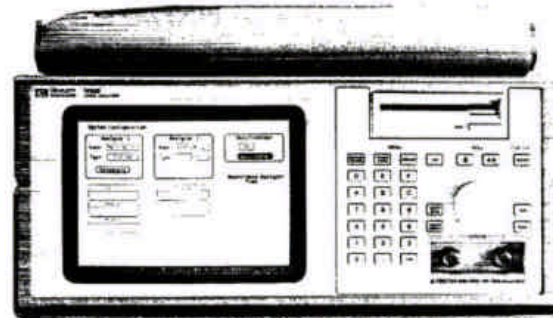
You can use the state analyzer's powerful triggering capabilities to determine when the oscilloscope should trigger. Glitch triggering on all channels makes the timing analyzer another great tool for triggering the scope. Simply set up the timing analyzer to trigger on a glitch, then trigger the oscilloscope to capture the activity around the glitch. By getting an analog display of the signal, you can determine whether the glitch is really a problem.



Portable Analyzers

The HP 1652B/1653B Portable Analyzers are ideal for service applications. Their small size and light weight (just 24 lb) make them easy to carry to test sites. With the built-in scope, you have two complete instruments in one small package.

- See analog events with a general-purpose 100 MHz single-shot BW digitizing scope for viewing analog events
- Automatic pulse parameter measurements



See Pre-Trigger Events

2 K sample memory per oscilloscope channel lets you view events up to 5 s before the trigger, while maintaining better than 1-ns time-interval accuracy.

Automatic Pulse Parameter Measurements

Quickly analyze a signal's analog properties without having to count gratitudes. Choose automatic measurements or time markers to measure voltage and timing relationships. The HP 1652B/1653B automatically measures the following pulse parameters:

- + pulse width
- frequency
- rise time
- peak-to-peak voltage
- preshoot
- pulse width
- period
- fall time
- overshoot

Automatic Marker Search

Using the automatic marker search, you can examine waveforms for specific patterns that could be the cause of a system crash. Or use the automatic marker search statistics to reveal setup and hold-time violations as you make repeated measurements on the system. After each run, the markers are placed on specified patterns, and statistics are compiled on the mean, minimum, and maximum marker placement times, so you can see how often a specific event occurs.

Hardcopy Output

After using the built-in oscilloscope to find an elusive problem, use either an HP-IB or RS-232 printer to obtain a permanent record. The HP 1652B and 1653B support over 10 printers.

All Other Features of the HP 1650B/1651B

All of the other features of the HP 1650B/1651B logic analyzers are included in the HP 1652B/1653B. These features include 80/32 channels of state and timing analysis, full-featured triggering, built-in disk drives, and support for most popular processors and bus interfaces. And the data and configuration files of the HP 1652B/1653B are compatible with the HP 1650B/1651B/1654B and with the HP 16510B. You can transfer information from one analyzer to another.

Key Specifications and Characteristics

	HP 1652B	HP 1653B
Timing	100 MHz all 80 channels	100 MHz all 32 channels
State	35 MHz all 80 channels	35 MHz all 32 channels
Analog	2 - 400 MSa/s 100 MHz BW Simultaneous acquisition channels	2 - 400 MSa/s 100 MHz BW Simultaneous acquisition channels
Glitch capture	80 channels	32 channels
Microprocessor support	Most 8-, 16-, and 32-bit microprocessors, buses	Most 8-bit microprocessors, buses

See page 343 for ordering information.

LOGIC ANALYZERS

General Characteristics

HP 1650B, 1651B, 1652B, 1653B, 1654B, 16500A

Characteristics

Disk Drives/Files

Built-in disk drives file types: System software, configuration (contains instrument configuration, data, pointer to inverse assembler file), inverse assembler, auto-configuration.

Autoload designation: A predefined configuration file can be loaded at powerup.

Disk operations: Store, load, copy, duplicate disk, pack disk, re-name, purge, format disk.

Programmability/IO Ports

Instrument settings and operating modes can be remotely programmed for all logic analyzer models with either RS-232C or HP-IB (IEEE-488). Both ports are standard on all analyzers. Either port can be used for hard-copy output.

Hard-Copy Output

Printers supported: HP ThinkJet, HP QuietJet, HP LaserJet series, HP PaintJet, HP DeskJet, Epson and Epson-compatible (such as Epson RX-80, RX-100, MX-80, MX-100) printers via RS-232C or HP-IB

HP-IB interface functions: SH1, AH1, T5, TE0, L3, LE0, SR1, RL1, PP1, DC1, DT1, C0, and E2

RS-232C Configurations

Protocols: XON/XOFF, ENQ/ACK, none, data

Bits: 8

Stop bits: 1, 1½, 2

Parity: None, odd, even

Baud rates: 110, 300, 600, 1200, 4800, 9600, 19200

Input/Output Rear-Panel BNCs

Input BNC: Labeled port-in (HP 16500A) or external trigger input (HP 1650B/1651B/1652B/1653B/1654B). Input signal must drive 6.1 mA (I_{in}) @ 0.5 V (V_{in})

Output BNC: Labeled port-out (HP 16500A) or external trigger output (HP 1650B/1651B/1652B/1653B/1654B). Output signal is active high, TTL output level, high > 2 V into 50 Ω, < 0.4 V into 50 Ω.

Auxiliary Power Available

Each cable is capable of providing 1/3 A maximum at 5 V. The primary use of the auxiliary power is as a source for preprocessors.

HP 16500A InterModule Bus (IMB)

Run control: Analog, timing, state, and pattern generation can be armed by group run. Modules can run concurrently or be armed in series. Each module can arm one or more modules.

Mixed display modes: Any timing or oscilloscope waveform displays can be mixed. State listings can be included with waveforms in the state/timing Mixed Mode display.

Acquiring data for mixed displays: To obtain a mixed display, multiple modules must be armed through the IMB. To include a state listing(s) in Mixed Mode Display, State Time Tagging must be on.

Time-interval accuracy between modules: Equals the sum of the channel-to-channel time-interval accuracies of each module used in the measurement, for a deskewed measurement.

Operating Environment

Temperature: Instrument, 0° to 50° C (+32° to 122° F). Disk media, 10° to 40° C (+50° to 104° F). Probes and cables, 0° to 65° C (+32° to 149° F)

Humidity: Instrument, up to 95% relative humidity at +40° C (+104° F). Disk media, 8% to 80% relative humidity.

Altitude: to 4,600 m (15,000 ft)

Vibration-operating: Random vibration 5 to 500 Hz, 10 minutes per axis, ~ 0.3 g (rms)

Vibration-nonoperating: Random vibration 5 to 500 Hz, 10 minutes per axis, ~ 2.41 g (rms); and swept sine resonant search, 5 to 500 Hz, 0.75 g (0 to peak), 5-minute resonant dwell @ 4 resonances per axis

Weight

HP 1650B/1651B/1654B: Net, 10.0 kg (22 lb); shipping 18.2 kg (40 lb)

HP 1652B/1653B: Net, 11.0 kg (24 lb); shipping 19.0 kg (42 lb) shipping

HP 16500A (max): Net, 18.1 kg (40 lb) + (.7 kg (1.6 lb) × number of cards); shipping 25.9 kg (57 lb) + (3.6 kg (8 lb) × number of cards)

Power

HP 1650B/1651B/1652B/1653B/1654B: 115 V/230 V, 48 to 66 Hz, 200 W max

HP 16500A: 115 V/230 V, 48 to 66 Hz, 475 W max

Size

HP 1650B/1651B/1652B/1653B/1654B: 194.3 mm H × 425.4 mm W × 355.6 mm D (7.65 in × 16.62 in × 14.0 in) including rear feet, excluding bottom feet

HP 16500A: 222.2 mm H × 425.7 mm W × 548.6 mm D (8.75 in × 16.76 in × 21.6 in), including rear feet, excluding bottom feet

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Please click on: http://teledac.com/ex-equip_b.htm
